Report Summary

- ## Problem Description / Technical Scope
  - ### enable development of the complex parallel adaptive software systems crucial to next generation of application systems

- ## Relevant Disciplines / Technologies
  - ### languages,compilers, performance, etc.
  - ### frameworks, standards, representations, etc.

- ## Major Technical Challenges
  - ### Framework for end-to-end tool support
  - ### Dealing with adaptive, dynamic systems

Addressing the Challenges

- ## Challenges
  - ### C1: enabling large scale PAD applications and systems
  - ### C2: enabling compositional development in the face of adaptivity
  - ### C3: spanning diverse architectures
- ## Novel Approaches
  - ### A1: integrated systems of tools
  - ### A2: coherent abstraction hierarchy
  - ### A3: bi-directional interfaces

Projected Outcome

- ## Outcome 1
  - **rapid prototyping of large complex systems**
- ## Outcome 2
  - **common tool framework for multiple platform**
- ## Outcome 3
  - **demonstration top to bottom PSE for some PAD domains**

Investment Strategy

- ## DARPA, Industry Support
  - ### Why DARPA? - large scale experiments
  - ### What other collaborations? multiple phase project where industry joins in second phase
- ## What if we did not do this?
  - ### risk of failure of new projects is increased
- ## Optimal Scale of Efforts
  - ### 15% of all project budgets increasing in out years, mixed scale projects

Other Issues Addressed

- **Most new projects have large measure of overlapping software technology requirements.**
- **Projects can go their own way or pool some resources for common software problems.**
- **Method and tool developers must be firmly coupled to the projects and requirements**
- **Separation of concerns - separate specifications of application and architecture**
- **Many issues discussed, will be addressed in report**

1996 DARPA ITO General PI Meeting, Dallas, TX

Other Issues Addressed

- **tools infrastructure projects**
- **meta-tools**
- **collaborative development of tools**
- **integration of development and operations**
- **early instantiation of tools for new architectures and application domains**